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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,516	01/04/2001	Eric W. Schieve	AMAT-5320	5078

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APPLIED MATERIALS, INC.
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EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 04/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,516

Applicant(s)

SCHIEVE ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 7-8, 11-12, 17-19 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,186,722 to Shirai and in view of U.S. Patent No. 5,746,562 to Hasegawa et al.

4. Shirai discloses the apparatus for processing multiple semiconductor wafers substantially as claimed in Figure 9 and comprising: a transfer chamber (53), a first and second fixed processing chambers (2) with wafer holding platforms with centers, wherein the first and second processing chambers are disposed on a common side of the transfer chamber; and a robot (54) rotatably mounted within the transfer chamber and having first and second spaced apart and vertically aligned wafer holding arms (7) extendable along respective longitudinal, parallel axes for inserting a pair of wafers (W) simultaneously into the first and second chambers.

5. With respect to claims 7 and 8, the apparatus may further comprise a load lock chamber (32) and additional processing chambers (see dashed line on right side of transfer chamber) corresponding respectively to the first and second chamber, the additional chambers being mounted relative to the load lock chamber in ways respectively like those of the first and second chambers.

6. With respect to claim 11, each set of first and second processing chambers may be considered a pair.

7. However, Shirai fail to teach either of the first and second processing chambers as adjustably mounted to the transfer chamber using means such as a bellows assembly.

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8. Hasegawa et al. teach the use of bellows assemblies (elastic gas tight holding means) for the purpose of gas tightly sealing the portions between two chambers where previous evacuation of the chambers has caused elastic deformation of each of the chambers and damage to the positional relationships of components inside the chamber causing an adverse affect on sample transfer precision (column 1, rows 61-66 and column 2, rows 23-31, rows 40-46).

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided bellows assemblies for one or both of the first and second processing chambers in Shirai in order to elastically gas tightly seal the portions between two chambers where previous evacuation of the chambers has caused elastic deformation of either of the chambers and damage to the positional relationships of components inside the chamber cause an adverse affect on sample transfer precision as taught by Hasegawa.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai and Hasegawa et al. as applied to claims 1, 3-4, 7-8, 11-12, 17-19 and 21-24 above, and further in view of European Patent No. 480735 A to Selbrede.

11. The prior art discloses the invention substantially as claimed, including disclosing the first and second chambers as closely spaced self-contained units supported in a cantilever fashion from a wall of the transfer chamber and capable of simultaneous processing.

12. However, the prior art fails to teach each of the chambers capable of processing using edge purging.

13. Selbrede teach the use of edge purging for the purpose of preventing edge and backside coating during processing, to improve temperature uniformity and to minimize the amount of gas used during processing (see USE/ADVANTAGE).

14. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided processing chambers capable of edge purging in the prior art in order to prevent edge and backside coating during processing, to improve temperature uniformity and to minimize the amount of gas used during processing as taught by Selbrede.

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15. Claims 5 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai and Hasegawa et al. as applied to claims 1, 3-4, 7-8, 11-12, 17-19 and 21-24 above, and further in view of U.S. Patent No. 5,611,861 to Higashi.

16. The prior art discloses an apparatus for processing multiple semiconductor wafers substantially as claimed and as described above.

17. The prior art fails to teach the use of a bellows assembly sealed between a first plate and second plate and a hermetically sealed wafer passageway between the chambers nor are means for securing the relative positions of the plates once adjustments thereto have been effected disclosed.

18. Higashi teaches the use of a coupling system comprising bellows assembly (Figures 4A and 4B, 17a and 17b; column 3, rows 46-50) and means for securing (column 7, rows 4-11; column 9, rows 25-27) the relative positions of the plates for the purpose of connecting and disconnecting the valves, allowing communication between each of the process chambers and the transfer chamber in a hermetical sealed fashion.

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a bellows assembly and means for securing the relative positions of the plates in the prior art in order to connect and disconnect the valves communicating with each of the process chambers and the transfer chamber in a hermetical sealed fashion as taught by Higashi.

20. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi as applied to claims 5 and 13-16 above, and further in view of U.S. Patent No. 4,854,611 to Press.

21. The prior art discloses the claimed apparatus substantially as claimed and as described above.

22. However, the prior art fails to disclose a mechanism for adjustably mounting the second chamber, wherein the first and second plates are hinged together along a bearing line such that position adjustments thereto can be made in the "X", "Y" and "Z" directions and for thereafter rigidly fastening in place such position.

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23. Press discloses a bellows assembly comprising a first plate (10) and a second plate (11) with a bellows element (12) sealed between the plates providing for relative movement in the "X", "Y" and "Z" directions (Figures 1A-C) for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate—axial travel, misalignment and angular travel (column 2, rows 59-64). Press further discloses means for rigidly fastening in place such position for the purpose of minimizing the possibility of bellows failure in use (column 1, rows 31-33).

It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided relative movement in the "X", "Y" and "Z" directions in the prior art for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate as taught by Press and to have provided means for rigidly fastening in place such position in the prior art for the purpose of minimizing the possibility of bellows failure in use as taught by Press.

24. Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,186,722 to Shirai and in view of U.S. Patent No. 5,746,562 to Hasegawa et al. in view of U.S. Patent No.

25. Shirai and Hasegawa et al. disclose the invention substantially as claimed and as described above, including each of the chambers being hermetically (gas tightly) sealed, as well as a remotely controlled robot (via controller 48, see Figure 5).

26. However, the prior art fails to teach using a slit valve as the sealing means.

27. Hurwitt teach using a slit valve a slit valve for isolating a process chamber and a transfer chamber (column 4, rows 19-30).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a slit valve in the prior art in order to isolate a process chamber and a transfer chamber as taught by Hurwitt.

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29. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai, Hasegawa et al. and Hurwitt as applied to claim 9 above, and further in view of U.S. Patent No. 4,854,611 to Press.

30. The prior art discloses the claimed apparatus substantially as claimed and as described above.

31. However, the prior art fails to disclose a mechanism for adjustably mounting the second chamber, wherein the first and second plates are hinged together along a bearing line such that position adjustments thereto can be made in the "X", "Y" and "Z" directions and for thereafter rigidly fastening in place such position.

32. Press discloses a bellows assembly comprising a first plate (10) and a second plate (11) with a bellows element (12) sealed between the plates providing for relative movement in the "X", "Y" and "Z" directions (Figures 1A-C) for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate—axial travel, misalignment and angular travel (column 2, rows 59-64). Press further discloses means for rigidly fastening in place such position for the purpose of minimizing the possibility of bellows failure in use (column 1, rows 31-33).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided relative movement in the "X", "Y" and "Z" directions in the prior art for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate as taught by Press and to have provided means for rigidly fastening in place such position in the prior art for the purpose of minimizing the possibility of bellows failure in use as taught by Press.

34. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirai and Hasegawa et al. as applied to claims 1, 3-4, 7-8, 11-12, 17-19 and 21-24 above, and further in view of U.S. Patent No. 4,854,611 to Press.

35. The prior art discloses the claimed apparatus substantially as claimed and as described above.

36. However, the prior art fails to disclose a mechanism for adjustably mounting the second chamber, wherein the first and second plates are hinged together along a bearing line such that position

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adjustments thereto can be made in the "X", "Y" and "Z" directions and for thereafter rigidly fastening in place such position.

37. Press discloses a bellows assembly comprising a first plate (10) and a second plate (11) with a bellows element (12) sealed between the plates providing for relative movement in the "X", "Y" and "Z" directions (Figures 1A-C) for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate—axial travel, misalignment and angular travel (column 2, rows 59-64). Press further discloses means for rigidly fastening in place such position for the purpose of minimizing the possibility of bellows failure in use (column 1, rows 31-33).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided relative movement in the "X", "Y" and "Z" directions in the prior art for the purpose of accommodating the three categories of strain to which a bellows assembly can be subjected and to which it is required to accommodate as taught by Press and to have provided means for rigidly fastening in place such position in the prior art for the purpose of minimizing the possibility of bellows failure in use as taught by Press.

Response to Arguments

39. Applicant's arguments see Paper No. 8, filed 01/20/02, with respect to the rejection(s) of claim(s) 1-23 under have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Conclusion


40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703.872.9310 for regular communications and 703.872.9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km
April 17, 2003



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